Tank Waste Remediation System

Chapter 3

Tank Farm Operations

How Big is the "Tank Farm Machine?"

- 28 double-shell tanks
- 149 single-shell tanks
- 40 inactive miscellaneous underground storage tanks
- 8 active miscellaneous underground storage tanks
- ~200 miles of underground pipe
- ~50,000 valves
- ~1,400 intertank transfer lines
- 22 active ventilation systems

Ongoing Tank Farm Activities

- Routine
  - 54,000 radiation zone entries per year to:
    - Perform ~4,000 equipment preventative maintenance items per year
    - Perform ~2,000 equipment repairs/year
    - Make ~100 waste transfers per year from other cleanup efforts (~500,000 gallons received in 1997)
    - Read over 8,000 active instruments each year to ensure environmental and worker safety
    - Take over 13,000 radiological data points each year to ensure environmental and worker safety

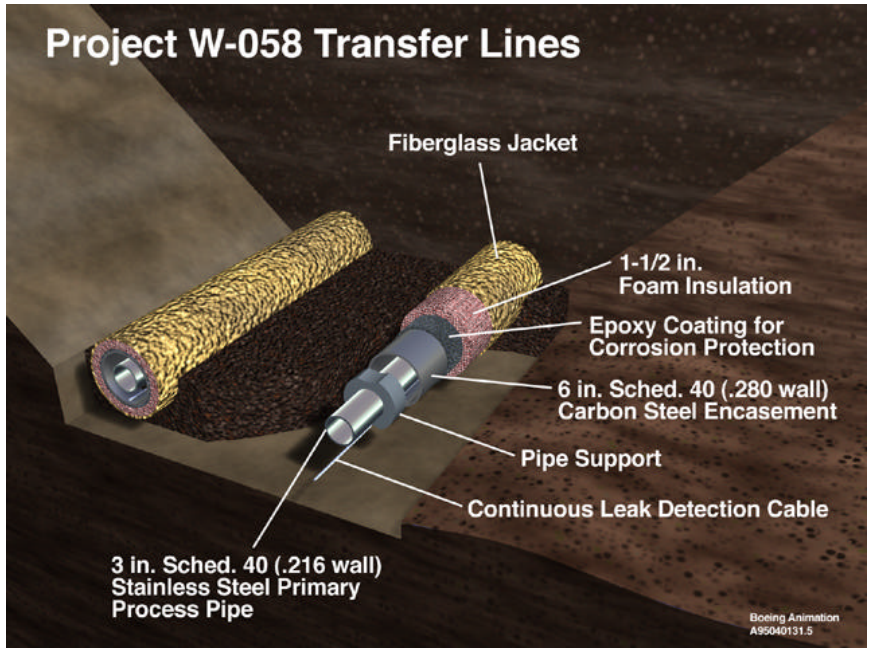
Ongoing Tank Farm Activities (cont'd)

- Major
  - Interim Stabilization (saltwell pumping)
    - 119 of 149 tanks complete
    - Start pumping one additional tank in FY 1998
  - Tank 101-SY mixer pump operation continues
    - Slight rise in surface level being investigated
  - Surface area decontamination
    - 7.5 million square feet out of 8.8 million square feet completed; 1.25 million square feet in FY 1997
  - Rebaselining of vadose zone contamination using new spectral gamma measurement technology

New Projects:
Cross-Site Transfer System

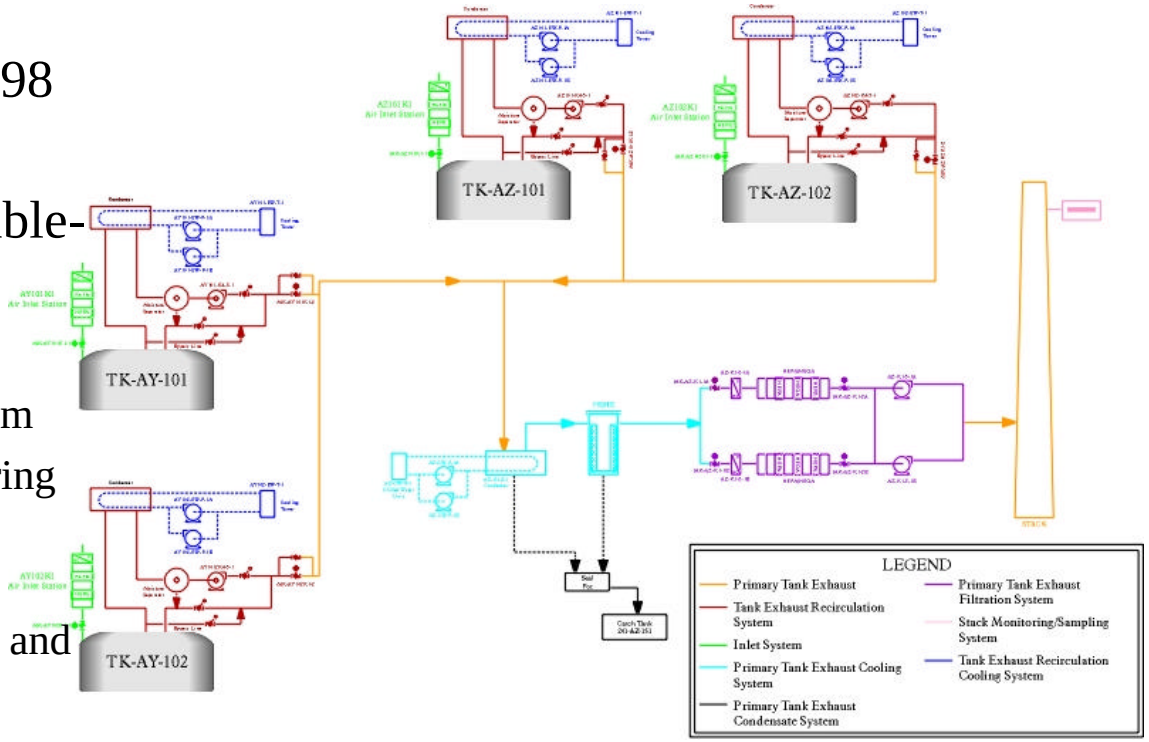
New, environmentally compliant transfer line between 200 West and 200 East Areas

- RCRA Compliant System
- Pipe-within-a-pipe design (~6.2 miles long)
- Capable of transferring liquids and sludges
- Operational in Summer 1998



New Projects:
AY/AZ Tank Farm Ventilation System

- Operational in March 1998
- Provides upgrades to ventilation for aging double-shell waste tanks
  - Filtration systems
  - Closed loop cooling system
  - Continuous stack monitoring and sampling system (compliant system)
  - Automated leak detection and gas absorption capability

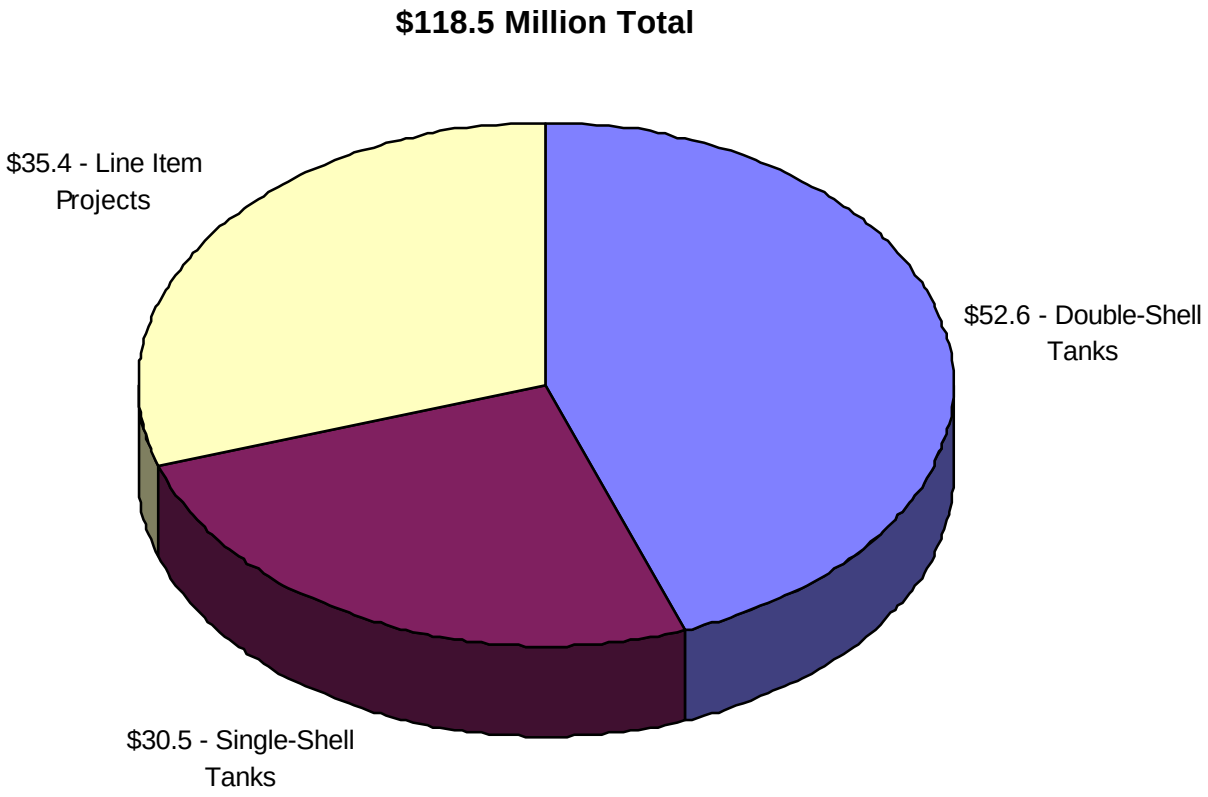


- Eliminates liquid discharges to the environment
  - Double-encased underground piping with leak monitoring

New Projects: Project W-314 Tank Farm Restoration and Safe Operations

- Phase I provides upgrades to the waste transfer system to support safe, reliable waste feed to the private contractors
  - Double-contained waste transfer lines
  - Instrument/control and electrical upgrades
  - Pit modifications
- Phase II provides plant modifications to:
  - Improve infrastructure reliability
  - Reduce operations and maintenance costs

FY 1998 Operations Budget



Problem:
Tank Leakage to the Vadose Zone

- 67 single-shell tanks have leaked in the past
  - About 1 million gallons (2 percent of current tank waste volume)
  - About 1 million curies (0.5 percent of total tank radioactivity)
- By comparison, 450 billion gallons (0.1 million curies) were discharged to the soil via cribs, ponds and ditches in the 200 Areas, with some discharges adjacent to tanks.
- In 1997, DOE confirmed that prior tank leakage had impacted groundwater.
- Some radionuclides are moving faster and deeper into the vadose zone than previously estimated

Vadose Zone Contamination - What is being done?

- Evaluating the use of surface controls to slow or stop liquid from seeping into the ground
- Characterizing the lower vadose zone (from the bottom of the tank to the groundwater)
- Completing the spectral gamma logging baseline for presence of radionuclides beneath the 200 Areas
- Independent reviews of activities and programs
- Integrating data needs with the Environmental Restoration Groundwater Monitoring program
- Compiling historical monitoring and soil characterization data
- Working with Tribal Nations and Regulators to finalize a TWRS Vadose Zone Characterization Program Plan

Problem: Delays Associated with Interim Stabilization

- 119 of 149 single-shell tanks have been interim stabilized (pumpable liquids have been removed).
- Three formerly leaking tanks are scheduled to start pumping.
  - Restart one tank in FY 1998
  - Initiate pumping on two tanks in FY 2000
- New starts are limited by system constraints (for example, transfer lines, tank capacities, etc.)
- Pathforward to complete saltwell pumping in FY 2004 has been implemented
  - Recovery Plan submitted to the Washington State Department of Ecology

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